Regional Municipality of Ottawa-Carleton Planning Department April, 1983

official plan review

POPULATION PROJECTIONS

OTTAWA-CARLETON, 1981-2001

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summary

INTRODUCTION

Population and employment dynamics of the late 1970's have created a new situation in Ottawa-Carleton. Recent analyses undertaken by the Regional Planning Department have shown that overall population growth and especially growth inside the greenbelt has not achieved the levels expected in the early 1970's when the Official Plan was developed. If these trends continue it is unlikely that the population distribution forecast in the Official Plan will be achieved by the year 2001.

It is therefore an appropriate time to review Parts 2 and 3 of the Regional Official Plan, which deal with the scale and structure of growth and transportation and utilities respectively.

In order to undertake an analytical review and evaluation of these sections of the Official Plan an understanding of the various factors influencing growth in population and employment levels and distribution is required.

In addition, an appreciation of the past trends in these variables is fundamental to the preparation of the possible future trends which could affect the Region over the long-term. These projections of future trends are required so that an evaluation of the alternative ways of providing for the expected growth in jobs and population can be undertaken.

Report Objectives

The objectives of this report are:

i. To provide a summary of the population and households growth and distributional trends of the 1971-1981 period in the context of the Regional Official Plan policies regarding these variables;

ii. To review previous regional population projections to ascertain if recent demographic changes impact on these projections and if so to develop revised regional population projections.

iii. Based on i. and ii. above, to identify a range of reasonable and attainable population projections which could occur by the turn of the century in the Ottawa-Carleton Region as input into the Official Plan review specifically, with regard to the options for the geographic distribution within the Ottawa-Carleton Region of the anticipated increases in population.

Ottawa-Carleton Population Growth 1971-1981

In the period 1971 to 1981 the population of Ottawa-Carleton grew from approximately 472,000 to nearly 547,000 or an increase of some 75,000 persons. This population growth translates into an increase of approximately 7,500 persons per year on average or a compound growth rate of approximately 1.5 per cent. The long-term planning strategy of the Official Plan of the Regional Municipality of Ottawa-Carleton is based on the assumption that the population of Ottawa-Carleton could increase to one million persons in approximately 30 years from the date of its adoption (1974). This assumption was predicated on a continuation of the population growth rate experienced in the 1961 to 1971 period. During this period Ottawa-Carleton grew by nearly 114,000 persons. The average annual population growth was approximately 11,350 persons while the compound growth rate was 2.8 per cent per annum.

The impact of the difference in growth levels and rates observed between the 1961-1971 and 1971-1981 period is obscured by the significantly lower growth rates of the last five years. In the period 1976-1981 Ottawa-Carleton grew by approximately 5,300 persons on average per year or a compound

growth rate of approximately 1.0 per cent. This rate and level of growth was lower than during any of the previous 5 year periods since 1951.

COMPONENTS OF POPULATION GROWTH IN OTTAWA-CARLETON 1961-1981

What are the factors which have resulted in the decline in the rate and level of population growth in Ottawa-Carleton? The change in population in any given period is a function of births, deaths and net-migration, the latter being the difference between in and out migration. An analysis of these variables indicated that declining fertility levels and lower net-migration levels were the principal causes of the decline in the level of growth. The mortality rate, in contrast, decreased slightly.

It is evident however from studies undertaken by the Planning Department that the major demographic factor influencing the level of population growth is the amount of net in-migrants.

Migration is mainly influenced by the rate of job formation. Other influences such as socio-cultural and political factors are also a consideration but not to the same extent as the growth in employment. The rate of job creation was and is one of the most important factors determining the rate of population growth in Ottawa-Carleton.

POPULATION GROWTH AND DISTRIBUTION - 1971-1981

Though the population growth levels and rates experienced in the 1971 to 1981 period are significantly lower than the previous decade (the experience of which formed the basis for the Regional Official Plan) the geographic distribution of this growth is also significant and is one of the main reasons why a review of the Official Plan is required.

In the decade 1971 to 1981, the municipalities located inside the outer limit of the greenbelt accounted for approximately 35 per cent of the total population growth in the Region. Therefore, approximately 65 per cent of the growth took place elsewhere, primarily in the three new urban communities outside the greenbelt.

What is really significant, however, is the growth situation experienced in the last five years. Between 1976 and 1981, 97% of the total population growth in Ottawa-Carleton occurred in the three urban communities outside of the greenbelt. In fact, in the same period the population of the municipalities inside the outer limit of the greenbelt declined by over 2,000 persons. Upon further analysis it can be seen that the total population of the three older urban municipalities of Ottawa, Vanier and Rockcliffe Park has declined continually since 1971 and by 1981 had dropped by over 11,000 persons. Therefore, it can be deduced that the majority of the net growth inside the greenbelt took place in new subdivisions in the Cities of Nepean and Gloucester.

Why has population inside the greenbelt, especially in the three older urban municipalities of Ottawa, Vanier and Rockcliffe Park declined in recent years? The answer is primarily related to decline in the size of households, that is the number of people living in each housing unit.

The decline in household size is an overall regional trend. Between 1971 and 1981 the average household size in Ottawa-Carleton declined from 3.3 persons per household to 2.7 persons per household.

Between 1971 and 1981 the population of Ottawa Carleton increased by 16 per cent while the number of households increased by nearly 46 per cent.

The reasons for the imbalance between population growth and household growth and the resultant decline in average household size are related to: a) changes in the age structure of the population, b) changes in the propensity to form households, c) a general decrease in overall fertility rates which has resulted in smaller families and d) other socio-economic and demographic factors possibly related to change in life styles, and accommodation and location preferences.

IMPLICATIONS OF CONTINUED TRENDS IN THE GROWTH OF HOUSEHOLDS

A recent report on land use prepared by the Regional Planning Department has shown that the per capita consumption of land for urban purposes between 1971 and 1981 was much greater than the consumption in the 1961 to 1971 period. This situation, if it were to continue, would have serious implications on the validity of the assumptions in the Official Plan used to determine the future land requirements of the Region.

POPULATION PROJECTIONS OTTAWA-CARLETON 1981-2001

The Regional Planning Department published a report in October 1980 which detailed a number of population projections for the period 1976 to 2001 for the Ottawa-Carleton region.

Subsequent to the publication of this 1980 report, a number of alternate projections have been prepared. These projections were prepared to provide a reasonable range of population for the period 1981 to 2001 as a basis for the review of future growth options in the Ottawa-Carleton Region.

The decision to develop new population projections was based on the desire to employ more recent demographic data which would represent the "current" situation in Ottawa-Carleton.

The fertility assumption of these projections differs from the fertility assumptions of the 1980 projections in that the fertility rates currently employed are based on actual 1979 Ottawa-Carleton age - specific fertility rates.

A further difference is in the starting years for the projections. The current set of projections commence at the year 1981 rather than in 1976.

The net-migration age-sex distributional assumptions are similar in both sets of projections, however, for the purpose of this report, only two levels of net-migration were chosen. These levels represent a low and high respectively. The low assumption equates to a continuation of trends in net-migration as observed in the 1976 to 1981 period (1,760 people per year) - a period of very low levels of annual net-migration. The high on the other hand was chosen to represent a level (6000 persons per year) of net-migration which is significantly higher than the average of the last 20 years which was estimated to have been approximately 4,950 per year.

The mortality rates employed in these new projections are identical to those employed in the population projections report of 1980.

The applications of these demographic assumptions on a constant annual basis from the year 1981 to the year 2001 through the projection model result in the following levels of population. The range at the year 2001 is from a low of 623,000 persons to a high of 723,000 persons.

The two population projections presented in this report represent a reasonable range of population which could occur by the turn of the century in the Ottawa-Carleton

POPULATION: OTTAWA-CARLETON 1981-2001					
	Year				
Assumption	1981	1986*	1991*	1996*	2001*
LOW	546,772	573,000	596,000	612,000	623,000
HIGH	546,772	595,000	643,000	685,000	723,000

Source: Ottawa-Carleton Planning Department April, 1982

*Population rounded to nearest thousand

Region provided that the underlying assumptions regarding fertility, mortality and employment-induced migration are met.

EMPLOYMENT PROJECTIONS 1981-2001 RELATIONSHIP BETWEEN POPULATION AND JOBS

Two employment projections have been prepared in conjunction with the two population projections.

The details of these projections are contained in the report Employment Projections 1981-2001 Ottawa-Carleton.

1. The low projection

Approximately 353,000 jobs are required to achieve the lower population projection.

This level of employment would result if federal government grew at the modest rate of 0.3% a year and most other sectors continued their recent trends.

2. The High Projection

Approximately 443,000 jobs are required to achieve the higher population projection.

This level of employment could be achieved if the Federal government maintained an average rate of growth of 2.0 per cent per year and the rate of job creation in most other sectors was greater than recent trends.

It has been determined that the number of persons supported per job will decrease in the future due to:

a) increased participation rates, combined with

b) an increased proportion of the population over 15 years of age (labour force age) and

c) the maintenance of a constant proportion of the population with more than one job.

Both projections assume a constant 17 per cent of the labour force works part-time. However, between 1976 and 1981, part-time employment increased from 13% to 17% of all jobs representing 68% of the total increase in employment. This proportion may continue to increase thereby producing higher participation rates and a lower number of persons supported per job.

OPTIONS FOR FUTURE GROWTH

The range of population and employment identified in this report will form the basis for reviewing and testing future options for the geographic distribution of the anticipated increases in population and employment within the Ottawa-Carleton Region to the year 2001.

These alternative options are contained in the report Options for Future Growth, Ottawa-Carleton 1981-2001.

1.0 Introduction

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Population and employment dynamics of the late 1970's have created a new situation in Ottawa-Carleton. Recent analyses undertaken by the Regional Planning Department have shown that overall population growth and especially growth inside the greenbelt has not achieved the levels expected in the early 1970's when the Official Plan was developed.[1] If these trends continue it is unlikely that the population distribution forecast in the Official Plan will be achieved by the year 2001.

It is therefore an appropriate time to review Parts 2 and 3 of the Regional Official Plan, which deal with the scale and structure of growth and transportation and utilities respectively.

In order to undertake an analytical review and evaluation of these sections of the Official Plan an understanding of the various factors influencing growth in population and employment levels and distribution is required. A detailed discussion of these factors especially related to employment growth is contained in the report Employment Projections Ottawa-Carleton 1981-2001 and in the paper Options for Future Growth in Ottawa-Carleton.

In addition, an appreciation of the past trends in these variables is fundamental to the preparation of the possible future trends which could affect the Region over the long-term. These projections of future trends are required so that an evaluation of the alternative ways of providing for the expected growth in jobs and population can be undertaken.

1.1 Report Objectives

The objectives of this report therefore are:

i. To provide a summary of the population and households growth and distributional trends of the 1971-1981 period in the context of the Regional Official Plan policies regarding these variables;

ii. To review previous regional population projections, specifically those prepared in the 1980 report "Population Forecasts, Ottawa-Carleton, 1976-2001 to ascertain if recent demographic changes impact on these projections and if so to develop revised regional population projections.

iii. Based on i. and ii. above, to identify a range of reasonable and attainable population projections which could occur by the turn of the century in the Ottawa-Carleton Region as input into the Official Plan review specifically, with regard to the options for the geographic distribution within the Ottawa-Carleton Region of the anticipated increases in population.

2.0 ottawa-carleton population growth 1971-1981

2.0 OTTAWA-CARLETON POPULATION GROWTH 1971-1981

In the period 1971 to 1981 the population of Ottawa-Carleton grew from approximately 472,000 to nearly 547,000 or an increase of some 75,000 persons (Table 2.1). This population growth translates into an increase of approximately 7,500 persons per year on average or a compound growth rate of approximately 1.5 per cent. The long-term planning strategy of the Official Plan of the Regional Municipality of Ottawa-Carleton is based on the assumption that the population of Ottawa-Carleton could increase to one million persons in approximately 30 years from the date of its adoption (1974).[2] This assumption was predicated on a continuation of the population growth rate experienced in the 1961 to 1971 period. During this period Ottawa-Carleton grew by nearly 114,000 persons. The average annual population growth was approximately 11,350 persons while the compound growth rate was 2.8 per cent per annum.

The impact of the difference in growth levels and rates observed between the 1961-1971 and 1971-1981 period is obscured by the significantly lower growth rates of the last five years. In the period 1976-1981 Ottawa-Carleton grew by approximately 5,300 persons on average per year or a compound growth rate of approximately 1.0 per cent. This rate and level of growth was lower than during any of the previous 5 year periods since 1951.[3]

2.1 Components of Population Growth in Ottawa-Carleton 1961-1981

What are the factors which have resulted in the decline in the rate and level of population growth in Ottawa-Carleton? The change in population in any given period is a function of births, deaths and net-migration, the latter being the difference between in and out migration. An analysis of these variables indicated that declining fertility levels and lower net-migration levels were the principal causes of the decline in the level of growth. The mortality rate, in contrast, decreased slightly.

TABLE 2.1
POPULATION GROWTH: OTTAWA-CARLETON
1951-1981

OTTAWA-CARLETON POPULATION

1951	1956	1961	1966	1971	1976	1981
246,298	287,246	358,410	413,692	471,931	520,533	546,849

ABSOLUTE POPULATION CHANGE OTTAWA-CARLETON

1951-1956	1956-1961	1961-1966	1966-1971	1961-1971	1971-1976	1976-1981	1971-1981
40,948	71,164	55,282	58,239	113,521	48,602	26,316	74,918

ANNUAL AVERAGE POPULATION CHANGE OTTAWA-CARLETON

1951-1956	1956-1961	1961-1966	1966-1971	1961-1971	1971-1976	1976-1981	1971-1981
8,190	14,233	11,956	11,648	11,352	9,720	5,263	7,491

% GROWTH COMPOUND PER ANNUM OTTAWA-CARLETON

1951-1956	1956-1961	1961-1966	1966-1971	1961-1971	1971-1976	1976-1981	1971-1981
3.1	4.4	2.9	2.6	2.8	2.0	1.0	1.5

SOURCE: 1951-1981 CENSUS OF CANADA

2.1.1 MORTALITY

The number of deaths is dependent on the death rate and of the population size and age structure.

The overall crude death rate in Ottawa-Carleton (number of deaths per 1,000 population) decreased from 8.0 to 6.2 deaths per 1,000 population during the 1960 to 1980 period while the absolute number of deaths increased from approximately 2,600 deaths per year to approximately 3,450 deaths by 1980 (Figure 2.1).[4]

The decline in the overall death rate since 1960 was mainly due to medical improvements which have substantially improved longevity in all age categories, but have especially reduced infant deaths. The increase in the absolute number of deaths is associated with the increased number of persons in the higher risk ages as a result of the general aging of the population.

The age structure changes of the Ottawa-Carleton population in the 1961 to 1981 period are shown in Table 2.2 and Figure 2.2. Population growth took place mainly in the age groups over 15 years of age, reflecting amongst other things the decline in the level of fertility which was associated with this period.

TABLE 2.2
OTTAWA-CARLETON: AGE STRUCTURE
1961-1981

AGE	1961	% Change 1961-1971	1971	% Change 1971-1981	1981	% Change 1961-1981
0-4	42,482	-14.1	36,480	-7.1	33,880	-20.2
5-14	73,227	31.3	96,150	-21.3	75,710	3.4
15-24	51,062	77.7	90,755	15.9	105,185	106.0
25-34	50,302	33.5	67,165	51.9	102,050	102.9
35-44	52,241	10.0	57,460	39.0	72,625	39.0
45-54	38,999	39.6	54,460	7.4	58,515	50.0
55-64	24,357	48.5	36,180	38.9	50,255	106.3
65+	25,730	29.2	33.255	46.2	48,635	89.0
TOTAL	358,400	31.7	471,905	15.9	546,849	52.6

Figure 2.1

Ottawa-Carleton 1960-1980 Deaths

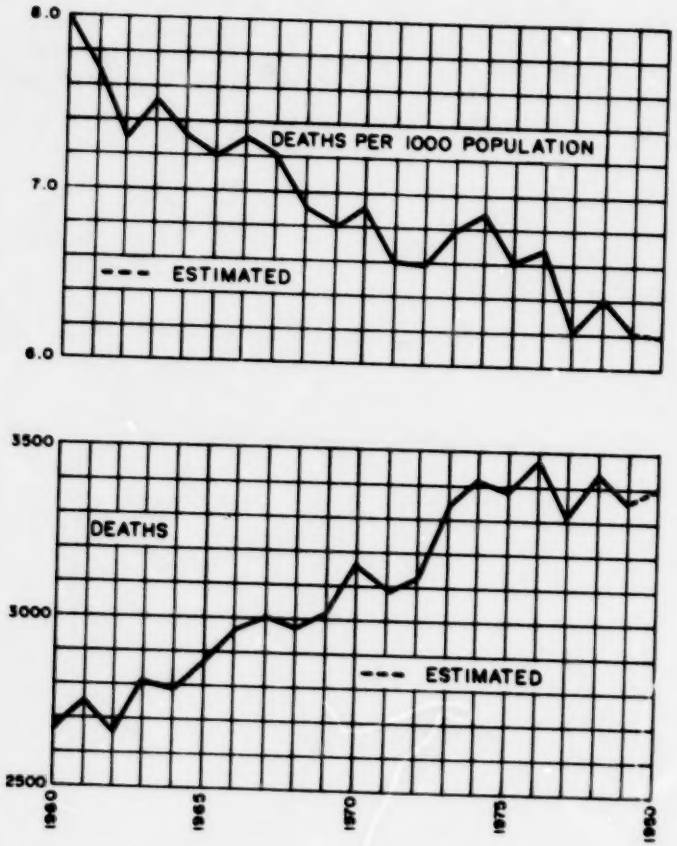
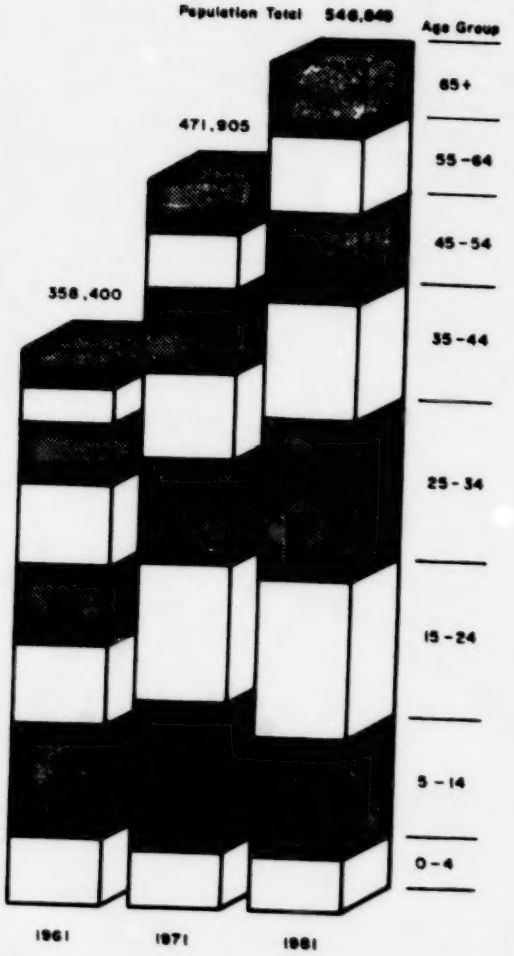


Figure 2.2

Population Profile,

RMOC: 1961,1971,1981



This situation is clearer when viewed in terms of each age group's capture of the total Ottawa-Carleton population growth of the 1961 to 1981 period (Table 2.3). It is readily apparent that the population aged 15 to 34 years accounted for over 56 per cent of the total population growth in Ottawa-Carleton. What is interesting, however, is that the growth in the population aged 55 years and over accounted for nearly 26 per cent of the population growth in the region. In fact increases in excess of 50 per cent were experienced in the size of all age groups 45 years and older when compared to the 1961 population in these ages (Table 2.2). The age group 55 to 64 years increased by over 100 per cent in the twenty years.

The major cause of death for the population aged 1-35 years is accidental and violent deaths. For the population over 35 years of age the major causes of death are cancer and diseases of the heart.

TABLE 2.3
POPULATION CHANGE OTTAWA-CARLETON
1961-1981 BY AGE CATEGORY EXPRESSED AS
A PROPORTION OF TOTAL POPULATION CHANGE 1961-1981

AGE	TOTAL CHANGE 1961-1981	% OF TOTAL CHANGE
0-4	-8,602	-4.6
5-14	2,483	1.3
15-24	54,123	28.7
25-34	51,748	27.5
35-44	20,384	10.8
45-54	19,516	10.4
55-64	25,898	13.7
65+	22,905	12.2
TOTAL CHANGE RMOC 1961-1981	188,449	100.0

2.1.2 Fertility

Births

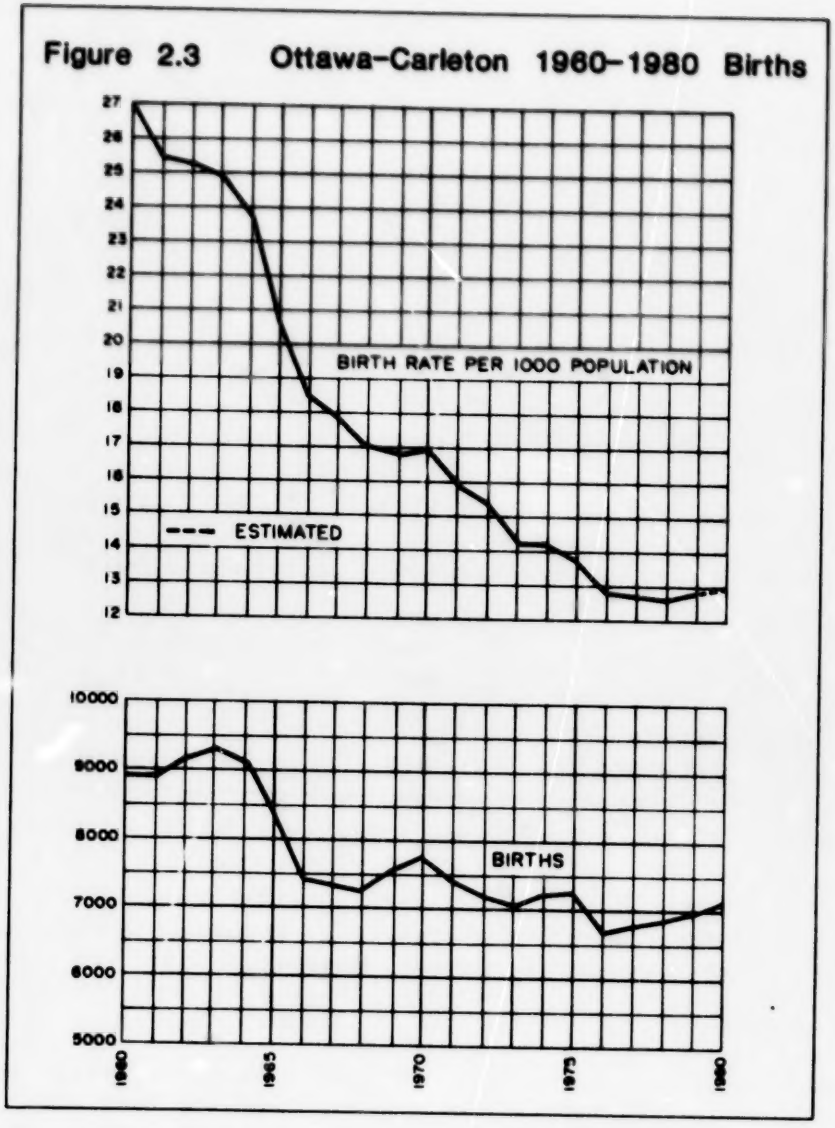
The number of births is dependent both on the fertility rate and on the number of women of child-bearing age (usually defined as the age group 15 to 49 years).

The overall crude birth rate in Ottawa-Carleton (number of births per 1,000 population) decreased from approximately 27 births per 1,000 population in the "post-war baby boom" period to approximately 13 births per 1,000 population in the "baby bust" period beginning in the mid 1960's.

The absolute number of births peaked in 1963 at about 9,300, falling by 1980 to 7,100 births. (Figure 2.3).

The number of females born during the "post war baby boom" period now reaching the prime child-bearing ages (20-34 years) is substantial.

Figure 2.3 Ottawa-Carleton 1960-1980 Births



For example, between 1961 and 1981 the total population of Ottawa-Carleton increased by 53% while in the same period the females aged 20-34 years increased by 114%.

Whether or not this huge child bearing potential will be realized in the short-term is dependent upon a number of interrelated factors. The desire for offspring is very volatile; it is influenced by cultural, socio-economic, attitudinal, psychological and medical factors not easily forecastable.

It is apparent, however, that a small upward revision in child-bearing plans would have a significant short-term impact on population growth in the Ottawa-Carleton region.

2.1.3 Natural Increase

The numerical difference between births and deaths is referred to as natural increase. The relative contribution of both natural increase and net-migration to population growth in the 1961-1981 period is shown in Table 2.4

Table 2.4

COMPONENTS OF POPULATION GROWTH
OTTAWA-CARLETON 1961-1981

PERIOD	% NATURAL INCREASE	% MIGRATION
1961-1966	55.4	44.6
1966-1971	38.3	61.7
1971-1976	39.2	60.8
1976-1981	66.6	33.4

SOURCE: Ministry of Treasury and Economics, Demographic Bulletin, February 1978. Statistics Canada, Vital statistics 1978-1980 1981 Census of Canada.

It is apparent that natural increase was a larger proportion of population growth in the early 1960's than net-migration. This situation is illustrative of the so called "post-war baby boom" period.

In the period 1966-1976 natural increase accounted for a smaller proportion of population growth than migration. This change can be attributed to declining levels of fertility associated with the "baby bust" period as well as relatively high levels of migration which occurred in Ottawa-Carleton after 1966. In the period 1976 to 1981 the relative contribution of natural increase to population growth reversed, that is, natural increase accounted for nearly 67 per cent of population growth in Ottawa-Carleton. This change in the relationship is mainly related to declining levels of net-migration. Natural increase levels remained virtually constant since the mid 1970's.

It is evident from the above and from previous studies undertaken by the planning department that the major demographic factor influencing the level of population growth in the Ottawa-Carleton Region is the amount of net in-migration.

2.1.4 Migration

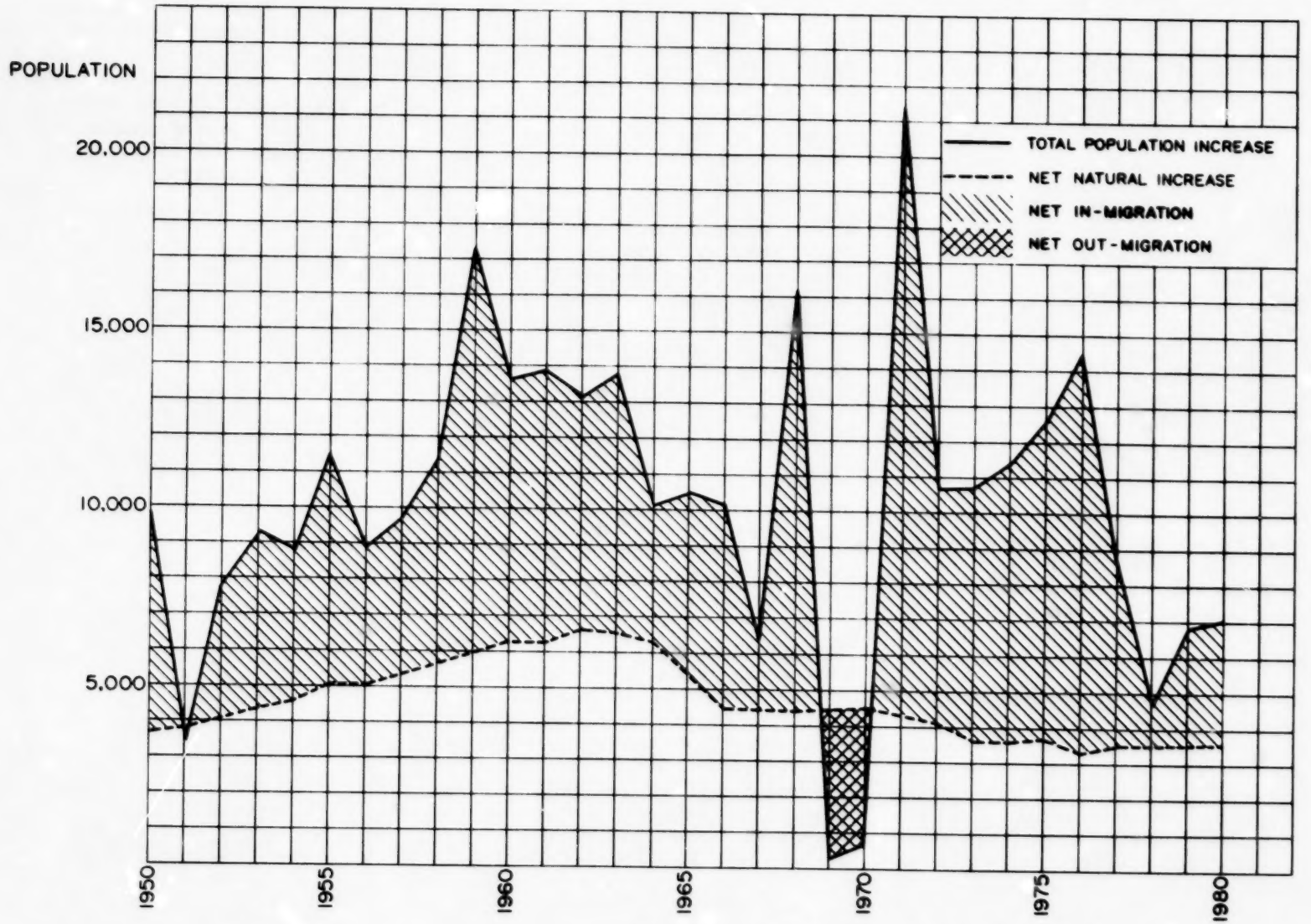
Net-migration is the balance of in and out migration. The components in Ottawa-Carleton are:

- net intraprovincial
- net interprovincial
- net international.

Migration is very volatile. The tremendous variation in past levels of net-migration is readily apparent in Figure 2.4 derived from Provincial Assessment figures. Net-migration in this graph is estimated as the residual population after accounting for natural increase. The shaded area represents total net migrants. It can be observed that net-migration between 1950 and 1980 was often a substantial component of the annual population change.

Of interest, though not readily apparent from the net-migration figures is the volume of in/out movement. Table 2.5 derived from Federal income tax records compiled by Statistics Canada shows total in/out and net migrants for the Ottawa-Carleton region in the period 1976 to 1979.

Figure 2.4 Components of Population Increase, RMOC 1950–1980



SOURCE: OTTAWA-CARLETON PLANNING DEPARTMENT, MOBILITY IN OTTAWA-CARLETON, AUGUST, 1980 FIGURE 1, VITAL STATISTICS, 1980, PROVINCIAL ASSESSMENT, 1980.

TABLE 2.5
TOTAL MIGRATION BY TYPE
OTTAWA-CARLETON, 1976-77 TO 1978-79

	INTRAPROVINCIAL	INTERPROVINCIAL	INTERNATIONAL	TOTAL
IN-MIGRANTS				
76-77	13254	16005	4273	33532
77-78	12666	18904	3621	35191
78-79	12384	15946	3469	31799
TOTAL	38304	50855	11363	100522
OUT-MIGRANTS				
76-77	13617	14886	2315	30818
77-78	13792	13265	2492	29549
78-79	13237	14088	2709	30034
TOTAL	40646	42239	7516	90401
NET-MIGRATION				
76-77	-363	1119	1958	2714
77-78	-1126	5639	1129	5642
78-79	-853	1858	760	1765
TOTAL	-2342	8616	3847	10121

Source: Statistics Canada, Migration Estimates from Tax Records, Dec., 1981

TABLE 2.6
TOTAL MIGRATION BY TYPE
OTTAWA-CARLETON, 1976-77 TO 1978-79

	AGE GROUP					
	0-15	16-24	24-44	45-64	65+	TOTAL
IN-MIGRANTS						
1976-77	8313	9163	12078	2880	1098	33532
1977-78	8735	8871	13258	3115	1212	35191
1978-79	7638	8140	11972	2923	1126	31799
TOTAL	24686	26174	37308	8918	3436	100522
OUT-MIGRANTS						
1976-77	7464	8185	11674	2851	644	30818
1977-78	6935	7589	11409	2900	716	29549
1978-79	6822	7465	11871	3100	776	30034
TOTAL	21221	23239	34954	8851	2136	90401
NET-MIGRATION						
1976-77	849	978	404	29	454	2714
1977-78	1800	1282	1849	215	496	5642
1978-79	816	675	101	-177	350	1765
TOTAL	3465	2935	2354	67	1300	10121

NOTE: Total Migration Includes Internal and International.

Source: Statistics Canada, Migration Estimates from Tax Records, Dec., 1981

The volume of in-migrants for the three year period was over 100,000 persons, while the total number of out-migrants from the Ottawa-Carleton region was in excess of 90,000 persons. The net or residual of this huge movement was approximately 10,000 persons.

Of note is the concentration of migrants in the reproductive ages (16 to 44 years, see Table 2.6). This concentration of migrants in the younger ages may also have an effect on the short-term future level of births in Ottawa-Carleton.

Migration is mainly influenced by the rate of job formation. Other influences such as socio-cultural and political factors are also a consideration but not to the same extent as the growth in employment.

The rate of job creation was and is one of the most important factors determining the rate of population growth in Ottawa-Carleton.

TABLE 2.7
POPULATION GROWTH OTTAWA-CARLETON 1971-1981
BY MAJOR GEOGRAPHIC AREA

	1971	Net Change	1976	Net Change	1981	Net Change 1971-1981
Ottawa, Vanier, Rockcliffe Portion	326,935	-544	326,391	-10,567	315,824	-11,111
Nepean	61,780	11,296	73,076	246	73,322	11,542
Gloucester	27,985	17,654	45,639	8,272	53,911	25,926
Total Inside Outer limit of Greenbelt	416,699	28,404	445,103	-2,046	443,057	26,358
West Urban Community	7,010	4,731	11,741	6,757	18,498	11,488
East Urban Community	6,335	5,144	11,479	11,774	23,253	16,918
South Urban Community (Barrhaven)	825	1,019	1,844	6,867	8,711	7,886
Total Urban Communities	14,170	10,894	25,064	25,398	50,462	36,292
Rural	41,005	9,370	50,375	2,955	53,330	12,325
Total	471,874	48,668	520,542	26,307	546,849	74,975

DERIVED FROM CENSUS OF CANADA (1971-1981)

2.2 Population Growth and Distribution 1971-1981

Though the population growth levels and rates experienced in the 1971 to 1981 period are significantly lower than the previous decade (the experience of which formed the basis for the Regional Official Plan) the geographic distribution of this growth is also significant and is one of the main reasons why a review of the Official Plan is required.

In the decade 1971 to 1981, the municipalities located inside the outer limit of the greenbelt accounted for approximately 35 per cent of the total population growth in the Region.[5] Therefore, approximately 65 per cent of the growth took place elsewhere, primarily in the three new urban communities outside the greenbelt.

What is really significant, however, is the growth situation experienced in the last five years.

Between 1976 and 1981, 97% of the total population growth in Ottawa-Carleton occurred in the three urban communities outside of the greenbelt. In fact, in the same period the population of the municipalities inside the outer limit of the greenbelt declined by over 2,000 persons. Upon further analysis (Table 2.7) it can be seen that the total population of the three older urban municipalities of Ottawa, Vanier and Rockcliffe Park has declined continually since 1971 and by 1981 had dropped by over 11,000 persons. Therefore, it can be deduced that the majority of the net growth inside the greenbelt took place in new subdivisions in the Cities of Nepean and Gloucester. However, it is readily apparent from Table 2.7 that the level of population growth which occurred in the City of Gloucester was over twice that of the growth which occurred in the City of Nepean in the 1971 to 1981 period.

TABLE 2.8
GROWTH IN PRIVATE OCCUPIED DWELLINGS OTTAWA-CARLETON
1971-1981 BY MAJOR GEOGRAPHIC AREA

	1971	Net Change	1976	Net Change	1981	Net Change 1971-1981
Ottawa, Vanier, Rockcliffe Portion	100,420	19,860	120,280	10,080	130,360	29,940
Nepean	16,285	4,715	21,000	2,360	23,360	7,075
Gloucester	6,593	5,356	11,949	4,186	16,135	9,542
Total Inside Outer limit of Greenbelt	123,298	29,931	153,229	16,626	169,855	46,557
West Urban Community	1,835	1,287	3,122	2,183	5,305	3,470
East Urban Community	1,610	1,693	3,303	3,167	6,470	4,860
South Urban Community (Barrhaven)	190	281	471	2,179	2,650	2,460
Total Urban Communities	3,635	3,261	6,896	7,529	14,420	10,790
Rural	10,623	3,551	14,174	2,041	16,215	5,592
Total	137,556	36,743	174,299	26,196	200,495	62,939

DERIVED FROM CENSUS OF CANADA (1971-1981)

Why has population inside the greenbelt, especially in the three older urban municipalities of Ottawa, Vanier and Rockcliffe Park declined in recent years? The answer is primarily related to declining household sizes.

Although the number of private occupied dwellings or households increased by nearly 30,000 in the three older urban municipalities inside the greenbelt (Ottawa, Vanier, Rockcliffe Park), the population decreased by over 11,000 persons (Tables 2.7 and 2.8). The major cause appears to be declining household size, that is the number of people living in each housing unit. For example, the average household size in 1971 for the City of Ottawa was 3.2 persons, by 1981 this figure had dropped to 2.3 persons. This was primarily due to the rapid increase in the number of one and two person households. For instance, approximately 65 per cent of the 121,705 private dwellings in the City of Ottawa are occupied by one or two person households. By comparison only 36 per cent of the 48,000 dwellings in the Cities of Nepean and Gloucester are occupied by households of this size.

The decline in household size is an overall regional trend. Between 1971 and 1981 the average household size in Ottawa-Carleton declined

from 3.3 persons per household to 2.7 persons per household.

Between 1971 and 1981 the population of Ottawa-Carleton increased by 16 per cent while the number of households increased by nearly 46 per cent.

The reasons for the imbalance between population growth and household growth and the resultant decline in average household size are explained elsewhere.[6] Suffice it to say that the imbalance is related to: a) changes in the age structure of the population, b) changes in the propensity to form households, c) a general decrease in overall fertility rates which has resulted in smaller families and d) other socio-economic and demographic factors possibly related to change in life styles, and accommodation and location preferences.

2.3 Implications of Continued Trends in the Growth of Households

A recent report on land use prepared by the Regional Planning Department[7] has shown that the per capita consumption of land for urban purposes between 1971 and 1981 was much greater than the consumption in the 1961 to 1971 period. This situation, if it were to continue, would have serious implications on the validity of the assumptions in the Official Plan used to determine the future land requirements of the Region.

In the decade 1961 to 1971, the total urban population in the Region increased by 35 per cent and the amount of urbanized land increased by 39 per cent. However, during the period 1971 to 1981, while the amount of urbanized land increased by 34 per cent, the urban population increased by only 13.5 per cent.[8]

In numeric terms, with each increase of 1,000 population, 27.8 ha and 64.8 ha of urban land were added during the two periods respectively.

If only residential lands are considered, with each increase of 1,000 population 17.7 ha of residential lands were developed between 1961 and 1971. This ratio increased to 35.3 ha per 1,000 new population between 1971 and 1981.

These trends have resulted in a reduction in gross urban density in the Region[9].

Since residential use has always been the predominant urban land use in the Region, any change in residential density has a significant impact on the overall urban density. The net residential density[10] has decreased from 82 persons per net residential ha in 1961 to 74 persons per ha in 1971 and 62 persons per ha in 1981.[11]

Two possible factors can contribute to a decline in residential density. They are declining household size (persons per household) and declining residential development density (occupied dwelling units per hectare). As was discussed previously, urban household sizes have declined.

A review of development density has indicated that the density of housing units has increased slightly. The number of occupied dwelling units or households in the urban area has increased from 21.4 households per hectare of residential land in 1961 to 21.7 in 1971 and 23.2 in 1981. Therefore, it has been concluded that the decline in residential density (expressed in persons per residential hectare) is due to the decline in household size.

This higher rate of land consumption may not be a problem at this time because Ottawa-Carleton has experienced a slower rate of population growth during the last 10 years than was originally anticipated. However, in the long term, unless there is a reversal in the trend of declining urban density the 24,000 hectares of land designated in the Regional Official Plan

for urban purposes will not be sufficient to accommodate the 900,000 urban population, as envisaged in the Regional Official Plan. Additional urban land may have to be designated to meet future needs.

3.0 Population Projections Ottawa-Carleton 1981-2001

3.0 POPULATION PROJECTIONS OTTAWA-CARLETON 1981-2001

The Regional Planning Department published a report in October 1980 which detailed a number of population projections for the period 1976 to 2001 for the Ottawa-Carleton region.[12] The population forecasting rationale employed in this report was based on the "components method" of population projection. The three components of population growth (births, deaths and net-migration) were employed in this method.

The population projections were developed through the use of a computer program acquired from the University of Chicago[13].

A total of seven population projections were developed employing various assumptions in the three components. The population ranged from a high of 782,000 to a low of 574,000 persons by the year 2001.

The low projection however, represented a 25 year period of zero net-migration.

A 25 year period of zero net-migration was considered highly unlikely, therefore the range of population which could occur by the year 2001 extended from a low of 633,000 persons to a high of 782,000 persons provided that the underlying assumptions regarding fertility, mortality and employment-induced migration were met.

Subsequent to the publication of this 1980 report, a number of alternate projections have been prepared. These projections were prepared to provide a reasonable range of population for the period 1981 to 2001 as a basis for the review of future growth options in the Ottawa-Carleton Region.

The decision to develop new population projections was based on the desire to employ more recent demographic data which would represent the "current" situation in Ottawa-Carleton.

The fertility assumption of these projections differs from the fertility assumptions of the 1980 projections in that the fertility rates currently employed are based on actual 1979 Ottawa-Carleton age - specific fertility rates.

The previous rates developed for 1976 were obtained from the Ontario Ministry of Treasury and Economics. These rates were developed by the Province for use in their Provincial Population Projection Model. The 1976 calculated rates however were found by the Ottawa-Carleton Planning Department to be significantly higher than the actual 1976 observed rates for the Region[14].

A further difference is in the starting years for the projections. The current set of projections commence at the year 1981 rather than in 1976[15].

The net-migration age-sex distributional assumptions are similar in both sets of projections, however, for the purpose of this report, only two levels of net-migration were chosen. These levels represent a low and high respectively. The low assumption equates to a continuation of trends in net-migration as observed in the 1976 to 1981 period (1,760 people per year) - a period of very low levels of annual net-migration. The high on the other hand was chosen to represent a level (6000 persons per year) of net-migration which is significantly higher than the average of the last 20 years which was estimated to have been approximately 4,950 per year.

The mortality rates employed in these new projections are identical to those employed in the population projections report of 1980.

A comparison of the assumptions of the 1980 projections and the two recently prepared projections is shown in Table 3.1.

The applications of these demographic assumptions on a constant annual basis from the year 1981 to the year 2001 through the projection model result in the following

TABLE 3.1
COMPARISON OF ASSUMPTIONS EMPLOYED IN
VARIOUS OTTAWA-CARLETON POPULATION PROJECTIONS

ASSUMPTION	POPULATION PROJECTIONS REPORT, OCT. 1980	LOW ALTERNATIVE PROJECTION	AS EMPLOYED IN TECHNICAL APPENDIX I, NOV. 1982*	HIGH ALTERNATIVE PROJECTION
1. Base Year	1976 (census)	1981 (Obtained from 1976 projection - Calibrated to 1981)		
2. End Year	2001	2001		2001
3. Fertility (Total Fertility Rate)	1,601.5 (1976) Declining to 1,334.5 by 1996 - obtained from "TEIGA" Dec. 1979	Actual 1979 T.F.R. of 1375.5 Held constant to 2001		Same as low alternative
4. Migration	Zero to 7,000 annual Average held constant to 2001	Average - 1976-1981 Annual Average of 1,760 held constant to 2001		6,000 annual average significantly higher than average of last 20 years - which was approximately 4,950/ year.
5. Mortality	Small increase in longevity	SAME		SAME

*Projections were prepared in April of 1982 by Planning Department.

levels of population. The range at the year 2001 is from a low of 623,000 persons to a high of 723,000 persons. (TABLE 3.2)

The population growth associated with the low projection would be accomplished by the population growing 0.9 per cent per year (4,890 people) in the 1981 to 1991 period and by a growth of 0.4 per cent per year (2690 people) in the 1991 to 2001 period. This is compared to an observed rate of growth of 1.5 per cent per year (7500 people) in the 1971 to 1981 period.

The population growth associated with the high projection would be accomplished by the population growing at a rate of 1.6 per cent per year (9620 people) in the 1981 to 1991 period and by a growth of 1.2 per cent per year (7,970 people) in the 1981 to 2001 period.

This is compared to an observed rate of growth of 1.5 per cent per year (7,500 people) in the 1971 to 1981 period.

Table 3.3 and Table 3.4 present the projected population for the high and low options respectively, on the basis of selected age categories.

The two population projections presented in this report represent a reasonable range of population which could occur by the turn of the century in the Ottawa-Carleton Region provided that the underlying assumptions regarding fertility, mortality and employment-induced migration are met.

Table 3.2

POPULATION: OTTAWA-CARLETON
1981-2001

Assumption	Year 1981	1986*	1991*	1996*	2001*
LOW	546,772	573,000	596,000	612,000	623,000
HIGH	546,772	595,000	643,000	685,000	723,000

Source: Ottawa-Carleton Planning Department April, 1982

*Population rounded to nearest thousand

TABLE 3.3
POPULATION BY AGE, OTTAWA-CARLETON
1981-2001 HIGH ASSUMPTION

AGE	YEAR 1981	1986	1991	1996	2001
0-14	108,955	111,191	119,168	125,019	124,038
15-24	101,757	95,813	86,226	82,488	88,031
25-34	105,974	118,441	121,061	115,199	106,454
35-44	72,034	93,129	114,143	127,165	129,604
45-54	58,568	61,841	73,919	94,025	114,540
55-64	50,973	55,319	56,463	59,721	70,640
65+	48,511	59,731	71,530	81,661	89,516
TOTAL	546,772	595,465	642,510	685,278	722,823

Source: Ottawa-Carleton Planning Department, April 1982

TABLE 3.4
POPULATION BY AGE, OTTAWA-CARLETON
1981-2001 LOW ASSUMPTION

AGE	YEAR				
	1981	1986	1991	1996	2001
0-14	108,955	106,343	108,423	107,835	100,933
15-24	101,757	90,329	77,592	71,230	73,305
25-34	105,974	111,782	106,908	95,276	83,172
35-44	72,034	90,389	106,996	113,558	108,747
45-54	58,568	60,744	71,076	88,437	104,583
55-64	50,973	54,619	54,957	57,165	66,492
65+	48,511	58,939	69,822	78,897	85,575
TOTAL	546,772	573,145	595,774	612,398	622,807

Source: Ottawa-Carleton Planning Department, April 1982

4.0 employment projections 1981-2001 relationship between population and jobs

4.0 EMPLOYMENT PROJECTIONS 1981-2001 RELATIONSHIP BETWEEN POPULATION AND JOBS

Two employment projections have been prepared in conjunction with the population projections which were identified in the previous section.[16]

The projected employment levels and relationship between projected and 1981 population and jobs is presented in summary form in table 3.5.

1. The low projection

   Approximately 353,000 jobs are required to achieve the lower population projection.

   This level of employment would result if federal government grew at the modest rate of 0.3% a year and most other sectors continued their recent trends.

2. The High Projection

   Approximately 443,000 jobs are required to achieve the higher population projection.

   This level of employment could be achieved if the Federal government maintained an average rate of growth of 2.0 per cent per year and the rate of job creation in most other sectors was greater than recent trends.

It can be observed from Table 3.5 that the number of persons supported per job will decrease in the future due to:

a) increased participation rates, combined with

b) an increased proportion of the population over 15 years of age (labour force age) and

c) the maintenance of a constant proportion of the population with more than one job.

Both projections assume a constant 17 per cent of the labour force works part-time. However, between 1976 and 1981, part-time employment increased from 13% to 17% of all jobs representing 68% of the total increase in employment. This proportion may continue to increase thereby producing higher participation rates and a lower number of persons supported per job.

The range of population and employment identified in this section will form the basis for reviewing and testing future options for the geographic distribution of the anticipated increases in population and employment within the Ottawa-Carleton Region to the year 2001.

TABLE 3.5

CHARACTERISTIC	PROJECTION ASSUMPTION YEAR 2001 LOW	HIGH	1981 SITUATION
POPULATION	623,000	723,000	546,849
EMPLOYMENT	353,000	443,000	293,700
RATIO OF POP/ JOBS	1.76	1.63	1.87
POPULATION GROWTH 1981-2001	0.65%/yr 3,808	1.40%/yr 8,807	
AVG ANNUAL GROWTH IN JOBS TOTAL	2,970	7,470	4,260 (76-
1981-2001 F.T.E*	2,820	6,780	2,810 81)
ESTIMATED PARTICIPATION RATE (%)	70.0	73.0	65 to 70
% POP 15 yrs	16.2	17.2	20.3
" 15-24	11.8	12.2	9.8
" 25-64	58.3	58.3	61.0
" 65+	13.7	12.3	8.9

*F.T.E. is full-time equivalents (all full time plus half of part-time)

Source: Options for Future Growth in Ottawa-Carleton, Employment Projections Ottawa-Carleton 1981-2001.

5.0 options for future growth

5.0 OPTIONS FOR FUTURE GROWTH

A number of alternative options for the geographic distribution of the anticipated increase in population and employment have been identified in the report, Options for Future Growth, Ottawa-Carleton.

It is intended that detailed analyses will be carried out on each of the options.

The steps of converting the two regional population projections to projections of population on a small area geographic basis for the review of options are not described in detail in this report. Simply stated the approach to be taken for the 1981-1991 and 1991-2001 periods is as follows:

1. Convert regional population projections to projections of households required under certain household formation assumptions. These assumptions are discussed in the draft Urban Residential Land Staging Report, May 1981 and Households in Ottawa-Carleton: Trends and Forecasts, Dec., 1981.

2. Household projections are then converted into projections of dwelling stock required to satisfy not only new household demand but also to allow for an adequate vacancy rate and to allow for replacement of stock lost through demolitions and conversions.

3. Once regional demand for dwelling stock is determined, it is necessary to develop an inventory of supply by land parcel. This inventory of supply describes the potential stock available for three periods (1981-1991, 1991-2001 and post 2001) by type, and location on vacant land. This inventory was created using: 1980 Vacant Residential Land Study, Sept., 1980, bi-annual Status of Registered Land Reports, and reports documenting the status of residential lands within the urban communities prepared in August 1981.

   To this inventory is added assumptions concerning the amount and location of infilling and redevelopment within the greenbelt as well as assumptions concerning rural residential development.

4. The future demand for dwelling stock is then matched against the inventory of supply on a small area basis.

   The result of this match is a listing of dwellings by type on a small area basis for the 1981-1991 period.

5. The population residing in these dwellings is calculated by first developing a regional occupancy factor by type of dwelling. To take account of differences in housing structural size, family size and geographic location a range of occupancy factors by type of orientation (ground, non-ground orientated dwellings) and geographic location is prepared. These factors are then applied to the occupied dwellings on a small area basis. The results are population by small areas, the sum of which is mathematically equal to the regional population projection for the projection year chosen - 1991.

6. The cycle is repeated for the 1991-2001 period.

7. Alternative patterns or options of population distribution can be developed in a similar fashion.

Footnotes

[1]For details refer to: Mobility in Ottawa-Carleton, Aug. 1980. Population Forecasts Ottawa-Carleton, 1976-2001, Oct., 1980; Households in Ottawa-Carleton, Trends and Forecasts, Dec., 1981; Employment in Ottawa-Carleton, 1976-1981, Feb., 1982; Population Trends in Ottawa-Carleton, 1976-1981, Apr., 1982. Employment Projections, Ottawa-Carleton, 1981-2001, Nov., 1982; Options for Future Growth, Ottawa-Carleton 1981-2001, Apr., 1983.

[2]Official Plan, Ottawa-Carleton Planning area, Section 2.1.1, page 2-3 point (1).

A table (Table 2.1) for reference purposes is also presented in the Official Plan. It does not reflect any objective of the Plan. This table illustrates the effect various alternative rates of population growth experienced in the period 1961-1971 have on the year at which a population threshold of one million persons could be reached. The range extended from the year 1998 to the year 2015.

[3]Population Forecasts Ottawa-Carleton, 1976-2001, Oct., 1980, P.2.

[4]Details of factors influencing mortality and a review of past trends in mortality and morbidity in Ontario and Ottawa-Carleton may be found with reference to Population Forecasts, Ottawa-Carleton, 1976-2001, Oct. 1980. Information on deaths was not available for 1981.

[5]Ottawa, Vanier, Rockcliffe, parts of Nepean and Gloucester.

[6]Households in Ottawa-Carleton Trends and Forecast, Dec., 1981.

[7]Land Use in Ottawa-Carleton, Regional Municipality of Ottawa-Carleton, Planning Department, Aug. 1982.

[8]Land Use in Ottawa-Carleton, P.5.

[9]Gross urban density, includes all developed lands including roads inside the outer limit of the greenbelt, West Urban Community, East Urban Community and Barrhaven. The density is expressed in persons (urban) per developed hectare.

[10]Similar to footnote one except areas of roads are excluded in net residential density calculations.

[11]Land Use in Ottawa-Carleton, P.7.

[12]Population Forecasts, Ottawa-Carleton 1976-2001, Oct. 1980.

[13]The details of this program and the "components" method of population projection are discussed in the Population report identified in the above footnote.

[14]The difference between calculated rates from the Province and the actual rates for Ottawa-Carleton in 1976 was found to be an overstatement of 202 births per 1000 women aged 15-49 years.

[15]The 1981 projections were prepared prior to the availability of the final results of the 1981 census by age and sex. Analyses recently undertaken by the Planning Department have indicated that the maximum difference between the final counts by selected age category and the calibrated figures employed in these projections is approximately +/-3 per cent.

[16]A detailed discussion of the various assumptions and methodology used in projecting employment to the year 2001 is contained in the report Employment Projections 1981-2001, Nov., 1982.

POOR

QUALITY

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